DOCUMENT RESUME

ED 102 752 95 EC 071 332

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TITLE Auditory Learning: Some Observations. Auditory Learning Monograph Series 4.
INSTITUTION Consortium on Auditory Learning Materials for the Handicapped, East Lansing, Mich.
SPONS AGENCY Bureau of Education for the Handicapped (DHEW/OE), Washington, D.C.
PUB DATE Jun 74
NOTE 18p.; For related documents see ED 100 077, 100 081, and EC 071 329-339

EDRS PRICE MF-$0.76 HC-$1.58 PLUS POSTAGE
DESCRIPTORS Auditory Perception; *Aural Learning; Evaluation Methods; *Exceptional Child Education; *Handicapped Children; *Instructional Materials; Learning Modalities; Student Behavior; Teaching Methods

ABSTRACT

Presented are observations and suggestions related to the design and expectations of an auditory learning experience with handicapped children. It is explained that comments are based on a 1973-74 project to evaluate auditory instructional materials in which 75 handicapped (blind, retarded, and developmentally disabled) and nonhandicapped students, all of whom were advantaged auditory learners, participated. Suggestions deal with the structure of material (such as the value of materials which provide feedback on performance) and the behavior of children (such as that observable attending behavior by itself does not indicate whether or not a student is listening). Also provided are observations on the assessment of auditory experience, including ways to elicit student evaluative reactions. Stressed is the importance of being open to children's responses and of allowing students sufficient time to respond. (LS)

ED102752

AUDITORY LEARNING: SOME OBSERVATIONS

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June 1974

Consortium on Auditory Learning Materials
for the Handicapped
Michigan State University

EC 071 332

ABSTRACT

Based on a year long study of the nature of auditory learning with handicapped learners, several observations and suggestions are presented in this monograph. Children identified as advantaged auditory learners were selected to participate in a project to evaluate auditory instructional materials. Throughout the study data was collected which form the basis for the several observations. These comments and suggestions relate to: 1) the structure of the auditory material, 2) the behavior of children during the experience, 3) the evaluation of the experience, and 4) observations regarding the discussion of the experience.

AUDITORY LEARNING: SOME OBSERVATIONS

Nancy A. Carlson

OVERVIEW

Most school children can learn effectively and efficiently through auditory instructional materials. However, many auditory instructional materials and auditory experiences in general can be improved by manipulation of one or more aspects of the auditory experience. This paper presents a group of suggestions regarding procedures that can be used to make auditory instruction more effective.

BACKGROUND

During the 1973-74 school year, the Great Lakes Region Special Education Instructional Materials Center conducted a series of studies regarding auditory instructional materials and the nature of auditory learning. The focus of this effort was on an examination of auditory learning that related to **advantaged instruction.** Only those auditory instructional materials were evaluated that utilized the auditory mode for the communication of information. Remedial instruction, including the assessment and the development of auditory abilities (auditory perception, auditory figure/ground, etc.) was **not** examined. Advantaged instruction capitalizes on a student's strength; in this instance the strength was the auditory channel, and information was provided through this strong channel.

The students that participated in the studies ranged in chronological age from 3 to 23 and included blind, retarded, developmentally disabled (behaviorally and/or learning disabled), and non-handicapped students. All studies were conducted in the student's regular school, yet in most instances the student was seen either individually or in small groups in a situation apart from the regular class activity, i.e., the student was separated either physically and/or cognitively from the ongoing classroom environment. All students that participated had a common attribute: according to their teacher, their best channel for receiving instruction was the auditory channel. In almost all cases the auditory channel was also the student's preferred channel for receiving information. A total of 75 students were seen during the course of the studies. Each child participated in many auditory learning experiences and hence a pattern of learning for each child emerged over time. The patterns of each student, when combined with all other students, led to the observations which follow.

OBSERVATIONS

The information that follows is informally presented. It has been written to be read, understood, and used for instructional purposes by classroom teachers. The information has been organized in four logical groupings. Though the groupings overlap, they are presented in this manner for clarity.

Structure of Material—how the design of the material can make the auditory experience more effective.

Behavior of Children—what can be expected from a child in an auditory experience.

Evaluation—how the effect of an auditory experience can be assessed.

Discussion—how to enhance the auditory experience.

STRUCTURE OF MATERIAL

1. Material that is meaningful for the student is most apt to be listened to.

Material which had been preselected by teachers or staff as potentially meaningful and interesting was not always perceived as such by the students. Whenever it was possible for a student to participate in the selection process, and choose the material he wished to listen to, there was more pay-off in terms of learning.

For example, one student was a totally passive, non-verbal student in the first six learning experiences. In the seventh session, he was asked to help evaluate a tape on "mini-bikes." He had previously **asked** to hear that particular tape, since he was going to get a mini-bike. In that session he outdid himself in terms of both content and affective learning. It was meaningful to him.

2. Students who have the prerequisite learning skills are more likely to learn from an auditory experience.

In order to benefit from an auditory learning experience, a student needs to be able to do certain things fairly well. In addition to that, however, the material must ask of the child those things which he can do. This is an appropriate material/student match.

One student was fascinated by a tape about geologic time and seemed to understand the content. He was unable to demonstrate this understanding, however, as he lacked the prerequisite map-making skills that the tape asked of him.

If a tape asks a student to do something he can't do yet but wants to do, that section of the tape can be erased and new directions can be recorded on the same tape. If the tape can't be erased, it should be possible to duplicate the appropriate sections on another tape and eliminate the inappropriate sections by not recording them.

3. Auditory material that is paced and timed to the student's ability and allows for distributed practice is most apt to be retained.

Most commercially available auditory instructional materials present key information only once during the instructional sequence. The need for redundancy or repetition of certain information became apparent during field-testing. This can be accomplished in several ways.

Available tapes can be recorded or duplicated to open reel formats, which then would allow key phrases or important sections to be spliced into a master tape as many times as necessary. The spliced master tape can then be duplicated onto a cassette which would provide the necessary information at least two times.

It is also possible to expand (slow down) or compress (speed up) the rate of presentation of auditorily presented information. A rate changer (speech compressor/expander) can be used to alter the rate of presentation without affecting the vocal pitch or quality of the original recording.

During field-testing, the length of time the students were required to listen varied from 3 minutes to 25 minutes. The maximum time range deemed most appropriate for all students to listen, regardless of other factors, was from 5 to 7½ minutes. When the time of passive listening went beyond 7½ minutes, comprehension had a marked tendency to decrease, despite continuing motivation. Without internal motivation, extreme boredom and frustration became apparent.

4. Students need to know the objectives of the auditory learning experience.

In some way, a student needs to have made clear what he/she should listen for and **why.** Organizing the auditory experience by providing some sort of advance organizer, either in the form of a pre-test or by telling the children what to attend to helps immensely. Focusing the listening for a specific purpose seems to provide additional motivation for many children. For example, in field testing, the

children were listening for the specific purpose of evaluating the material. Although they did not like some of the tapes they heard, they were still happy to continue their participation in the project.

5. Those materials which provide for interaction, or some time for active appropriate practice, are more likely to be attended to.

The type of interaction can vary; sometimes the child is expected to do something manipulative, sometimes it is answering questions, or repeating something, or responding to directions given on the tape. The opportunity for interaction seems to make the child feel that he is indeed a valuable human being and not just a passive receiver.

As was often demonstrated in the project, learning is more apt to occur if there is plenty of opportunity for active, appropriate practice. Interestingly enough, in most cases it didn't seem to matter if the child wasn't competent at the task. If there was opportunity for interaction and practice, there was sufficient motivation to try the experience.

An example built on the interactive principle was the "button box." Actually, this box, with a large red push button in the top, was merely a speaker in a metal case, extended by a jack from the main playback unit. Students were given the box to hold while instructional tapes were heard through the speaker. When student responses were called for, prerecorded pulses stopped the tape. When the child felt he had responded as he wished or could, he pressed the button to restart the tape. This form of tactile interaction gave the child a degree of control. The "button box" was very popular.

6. The student is more likely to attend to an auditory material if it contains some novel or unique aspect.

Most of the time, once the newness of materials, settings and staff had been sufficiently explored and/or talked about, the message was attended to by the child. In other words, the children paid attention to the content as they were expected to.

The difficulty with novelty or newness is that it can interfere with learning. Occasionally, the novelty of the experience was so overwhelming that the child could not overcome his fascination with extraneous or irrelevant factors to get to the necessary learning. There was one particular piece of equipment that fascinated many of the students of all ages and abilities. The machine had four buttons which the child could push for a variety of reasons—all of which retrieved specific information. All of the children enjoyed working with this machine; most liked doing the tasks associated with the content, but a few liked button pushing **only.** (Probably the same few

button pushers that every classroom has.) For most of the children the **novelty** of an experience, if designed in moderation, aided in the learning process.

Perhaps it is possible to hypothesize a continuum of novelty. On one end are experiences which are not sufficiently unique or interesting enough to even attract a student's attention. On the other end of the continuum are those experiences which are so novel that the student's attention is captivated by the unique, to the exclusion of all other parts of the learning experience.

7. The students seemed to like the materials which provided feedback on performance.

Very few commercial materials provide any direct feedback to the student. Most of the instances from which this observation is drawn are based on situations which were created especially for the particular learning experience. For example, in a pre-test situation, the student was often expected to respond to several taped questions requiring a content-related answer that could be found by listening to the tape. (The pre and post test questions were recorded by the project staff.) In the post test situation, the students were pleased to be given the taped correct response immediately following their individual response—whether or not their own response was correct.

One tape recording had a form of individualized feedback to the student. During this particular tape, the student was asked to repeat certain phrases or sentences. A pause was programmed on the tape and was followed by different types of reinforcement, i.e., "That was a good try," "Wasn't that fun?" etc. This form of feedback to the student seemed to keep interest at a very high level throughout a rather long tape.

BEHAVIOR OF CHILDREN

1. Observable attending behavior by itself does not indicate whether or not a student is listening.

Some children observed were in and out of their chairs, or were constantly fiddling with equipment, or were playing with toys they brought. These active children, nevertheless, **listened,** as evidenced by the responses to post test and discussion questions.

Other children observed sat very quietly, stared at the tape recorder throughout, did not move a muscle. Many of these children, although "perfectly behaved," did not learn one thing from the experience.

The key to evaluating behavior, as it relates to auditory learning, can be found in a child's baseline performance, or in observations of how the child normally performs. In other words, if he's **normally** all over the room, chances are he'll be all over the room, even if exposed to the most exciting and interesting material that can be found.

2. It seems important that the student have some responsibility for controlling the auditory learning experience.

In some cases, the children were quite happy putting in and taking out the cassette tape. Other children wanted to start and stop the equipment when they felt it was appropriate. In almost all cases, this responsibility for control led to more involvement in the learning process.

The availability of extremely simplified cassette tape recorders can allow the child to have complete control over the recorded presentation. There is little chance for the child to "mess up" the recording or the equipment. Given responsibility for control, more involvement in the learning process can be expected.

3. If the material is new, students will not recall all given information in only one listening experience.

In available auditory learning materials, the information may contain new concepts, vocabulary, etc. Many materials field tested, although matched fairly well to the child's ability, often seemed frustrating to that child when presented with little or no introduction to the subject matter.

After one listening experience, it seems impossible for a child to extract selectively that which he is expected to remember. Often the children requested, in one way or another, to listen to the material again.

4. The auditory experience alone is seldom sufficient to hold a sighted student's interest.

A sighted child (even a partially-sighted child) seems to need some visual focus of attention. The focused alternate channel, whether it is visual only or visual-kinesthetic, seems to screen out extraneous factors, so the child can better concentrate on auditory learning.

For example, some children were given a picture of a bird to look at while listening to information about birds. Those children who were given the picture were better able to answer questions about birds than those who didn't have a picture. With those materials

that did not have such a focus, a child's eyes often wandered, and this sometimes seemed to precipitate attention wandering.

Children who have a mental age under seven find it the most difficult to attend to auditory material that is lacking other forms of input (i.e., picture, worksheet, or interaction with another person). Older students could sit still and focus occasionally, but by no means totally, to solely auditory material.

EVALUATION

1. The nature of the evaluative instruments themselves—i.e., the *format* of the questions asked and not just what was asked—determined to a large extent what information was gained.

Auditory pre and post tests which called for fill-in-the-blank or auditory cloze procedures, or a closed response of any type seemed to be difficult for the students. Following the auditory content information the students were sometimes asked to respond "True or False" or "What was the ___ ____ ?" etc. The students were often unable to respond specifically with the appropriate answer. If the question were of a different type, i.e., "What did you learn from the tape?" or "What are some things you can tell me?" the responses were appropriate and often complete. Given their own frame of reference for recall, the students seemed better able to respond. Perhaps this is related to the nature of auditory message receiving, or perhaps it is related to learning in general. In any case, the handicapped students in this project were able to respond more appropriately to open questions rather than closed.

2. The *opportunity to rate* a material was definitely appreciated by both students and teachers.

Given a good relationship, the children especially were responsive to the opportunity to decide for themselves how they felt about that material. It took a while to establish mutual trust and allow the child to really feel his honest opinion was valuable.

The classroom teachers were also asked to use a particular material in class and then rate it. In both instances, (those when the children rated the experience and those when the teachers rated the experience) the rating scale was structured to allow for classification of responses. In the few instances where a scale was not used, the responses were not as satisfactory. (Specific examples of the rating scales used are included in the Appendix.) It should be noted

that the Student Rating Scale (three different faces on a single sheet of paper) was appropriate and was used with children of all mental and chronological ages.

3. Eliciting student evaluative reactions to auditory instructional materials is *more complex* than it seems on the surface.

Gaining a student's confidence and questioning him about affective feelings relating to a specific instructional material is much more difficult than merely evaluating content learning. Nevertheless, the evaluation of instructional materials must include the student's feelings about a particular material if decisions are to be made about the appropriateness of the materials in other situations. Many times this information is extremely difficult to obtain from learners. There are, however, a few observations and suggestions gained from working with many different types of handicapped children.

a. Children functioning at a low level are usually capable of only minimal responses to evaluative questions. This may mean nodding or shaking the head, a verbal yes/no response to a direct question, or a blank stare. For these children there are some limited-choice, concrete options. Examples of this type of question can be found in the Appendix under "Stage I."

b. Children functioning at higher levels, but who have been in school systems for awhile, have a tendency to respond to evaluative questions **as they think you want them to respond.** An example:

Question: "Johnny, how'd you like that tape?"
Answer: "Oh, that was good. I really liked it."
Or even more direct:
Question: "Did you like the tape?"
Answer: "Yes."

This student's response, of course, may be an accurate report of his feelings; however, when during the tape he has sworn under his breath, looked bored, looked at the clock and a few other things, the validity of his verbal response is questionable.

To get around this problem it is possible to ask indirect questions. If a learner likes or dislikes the auditory learning material for whatever reasons, it usually becomes apparent in the responses. Questions of this sort have been included under Stage II and Stage III sections of the attached pages.

c. Children who give limited responses (one word or word phrase) in reply to a "how" or "what" question can often be encouraged to elaborate by asking them "Why?" For example: "What could we do to make this tape better?"

A: "Shorten it."
Q: "Why?"
A: "Because it is boring during the part that talks about leaves—I already know that stuff about leaves."

Much **more** evaluative information was gained from asking **WHY.** You might want to make a mental note to keep "WHY" handy when eliciting learner reactions.

d. Even with elaborate precautions taken to try to separate the content learning task from feelings about the material and the auditory learning experience, the tendency to confuse the two was often present. One older student did quite well in content learning (i.e., change in performance from pre to post test) but stated she didn't like the experience at all. When asked WHY, she said she "absolutely hated history." When questioned further, she said that particular experience wasn't too bad (i.e., the tape was rather exciting in its presentation) but she still hated history.

Younger children are even less apt to separate the content from feelings and an awareness of this tendency to confuse is critical.

e. A few learners are **excessively verbal.** They respond very positively to attention, however brief, and really come on strong with responses. They may, in fact, not say anything worthwhile, but just keep on talking. For these learners, interrupting to clarify and summarize is appropriate.

"Now let's see Johnny; I heard you say you thought the tape was 'right on' in terms of what you were interested in, and it contained some good information and you like to listen to tapes. That's a nice analysis. Thank you for your cooperation."

The questions listed in the Appendix may be used as guides to types of questions appropriate for certain learners. It is quite conceivable that a particular learner may be given a question from each level. The questions are usable, but not mutually exhaustive.

DISCUSSION

All auditory experiences that the children were involved in were followed by a discussion. The discussion allowed evaluators and teachers the opportunity to further examine learning, to elicit the children's opinion of that material, and gain information about materials to be used in the future.

1. It is important to be OPEN to the children's responses.

Open questions were asked quite often. But more than that, the evaluators became very aware that each child responded in a different way. An openness on the part of the evaluator followed by careful requests for clarity and gentle probing often yielded unexpected results. Each child did learn something different, most likely related to his or her own background and personal experiences. By examining these many different responses, it was possible to make some comments and predictions about materials.

2. It is important to allow students sufficient TIME to respond.

For a child, organizing an auditory experience for discussion purposes seemed a more difficult task than had been anticipated. Allowing extra time—more than is typically given a student—seemed to be helpful to the students.

SUMMARY

Several observations have been presented which relate to the design and expectations of an auditory learning experience with handicapped children. Although the individual observations and suggestions are presented in separate groupings, there is no intent to imply that these categories are mutually exclusive or exhaustive. Instead, it is recognized that the structure of the auditory learning material is an **interactive** component of the process, and will affect the behavior of children and the evaluation and discussion of the auditory learning experience. If the comments and suggestions presented in this paper can be kept in mind, planned auditory learning experiences can become more effective and enjoyable for all concerned.

APPENDIX

STUDENT RATING SCALE

YES LIKED

? NOT SURE

NO DIDN'T LIKE

Name _____ Instructional Unit _____

APPENDIX

TEACHER EVALUATION FORM

How attentive were the students during the tape? (circle the appropriate number)

Very Attentive		Somewhat Attentive		Not Attentive
5	4	3	2	1

Did the students sing along with the tape when instructed to?

Yes		Somewhat		No
5	4	3	2	1

How did the students respond to the discussion at the conclusion of the tape?

Very well		OK		Not well
5	4	3	2	1

Do you think the students enjoyed the tape?

A lot		Somewhat		Not at all
5	4	3	2	1

How would you rate the tape?

Very worthwhile		OK		Not worthwhile
5	4	3	2	1

Comments:

APPENDIX

ELICITING LEARNER REACTION

Stage I*

1. (After using Student Rating Scale.) Why did you rate the tape that way?
2. What did you like about the story (tape)?
3. Do you think your mom (dad, sister, brother) would like this tape? Why?

NOTE: Stage I* learners cannot generalize and therefore cannot evaluate adequately. However, a child's **non-verbal reactions** may tell an evaluator all that is necessary regarding his feelings about the tape (i.e., giggling, frowning, wiggling, etc.).

Stage II*

1. What first caught your attention (and made you listen) in this tape? Why?
2. Can you think of anything that happened to you that was like what happened in the tape?
3. If you could make a tape for kids, what would you want to make it about? Why?
4. Think about the kids you know in school. Who do you think should listen to this? Why?
5. Pretend you're the teacher. Choose the next person to listen to this tape. Why?
6. Here are 10 chips. Show me how many chips this tape is worth. Why?
7. When do you want to listen to this tape again? Why?

Stage III*

1. Did you "get into" this tape? Why?
2. What "turned you on" about this tape? Why?
3. Think of some words to tell me about this tape. Think of as many as you can.
4. If you had a chance to make that tape over, what would you do differently? Why?
5. What things in particular interested you (didn't interest you) about this tape? Why?
6. What did you find yourself thinking about as you listened to this tape?
7. If you could make a tape for your friends, what would you want to make it about? Why?

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*Stage I—characterized by: egocentric, isolated thoughts, necessity for proximity to learning situation, and individuality of responses.

Stage IIa—characterized by: inconsistent and unpredictable cognitive behaviors, necessity for concrete objects, selectivity in generalizing and affinity for the obvious.

Stage IIb—characterized by: ability to solve problems if accompanied by concrete objects and sequenced events, integration of self-concept, and selectivity in generalizing.

Stage III—characterized by: ability to solve verbal problems logically, exaggerated concern for self, and emphasis on group relationships.

(Developmental characteristics of these stages are further described in another monograph in this series, **Bridging the Gap Between Materials and Learners: Maximizing Auditory Instruction.**)